a recording means for recording a signal from the signal processing means;

a display means for displaying a signal from the signal processing means;

an electric transmission means for electrically transmitting a signal from the signal processing means; and

a radiation source for generating radiation.

9. (Amended) The photoelectric converter according to claim 2, wherein the potential V_{dg} is greater than zero.

10. (Not Currently Amended) The system according to claim 8, further comprising a phosphor for converting a wavelength of radiation.

REMARKS

Claims 1-3 and 7-10 remain in this application. Claims 1 and 8 have been amended to define still more clearly what Applicants regard as their invention.

Claims 1 and 8 are the only independent claims.

In the Office Action, Claims 1-3 were rejected under 35 U.S.C.§ 103(a) as being unpatentable over U.S. Patent No. 5,591,963 (Takeda et al.).

Claim 7 was rejected under 35 U.S.C.§ 103(a) as being unpatentable over *Takeda et al.* in view of U.S. Patent No. 5,591,960 (Furukawa et al.) and U.S. Patent No. 4,740,710 (Arita).

accumulated in the photoelectric conversion element; and, a photoelectric conversion mode that accumulates at least one pair of holes and electrons generated in proportion to the amount of incident light.

Among the advantages of a converter constructed according to Claim 1 is that it is stable and has a high signal-to-noise ratio.

Takeda et al. relates to a photoelectric device having, on a substrate, in lamination, a first electrode layer, a first insulating layer for blocking carriers of first conduction and second conduction type from passing therethrough, a photoelectric conversion semiconductor layer, a second insulating layer for blocking carriers of the first conduction type and second conduction type from passing therethrough, and second electrode layers and a switch element having laminated a gate electrode layer, a third insulating layer, a semiconductor layer, an ohmic contact layer, a pair of first and second main electrode layers, and a wiring layer for electrically connecting first or second electrode layer of photoelectric conversion element to first main electrode layer of the switch element, without providing the injection blocking layer.

An object of the present invention is to emit electrons for injection to an interface between an i layer and an insulating layer and to suppress an increase of noise caused by the injection of electrons to the interface. To achieve the object, a laminate which differs from the prior art is provided, and a new idling mode is defined.

The Examiner rejected Claim 1 based on the assertion that by combining the Examples 1 and 2 of *Takeda et al.*, the present invention would have been obvious to one of ordinary skill in the art. However, Applicants submit that none of the references, including *Takeda et al.*, disclose or suggest the above object of the present invention, and thus the

present invention would not have been obvious in view of the disclosure of those references. Of equal importance is the fact that the constitution of a photoelectric conversion element disclosed in *Takeda et al.*, a first electrode layer, a first insulating layer, a photoelectric conversion semiconductor layer, a second insulating layer, and a second electrode layer, is different from Applicants' element as set forth in Claim 1. On the other hand the element of the present invention does not include the second insulating layer. In its place Claim 1 requires an injection blocking layer for blocking the injection of only one of the holes and electrons. The effect of this claimed structure is apparent from a comparison of band views of *Takeda et al.*'s Figs. 5A-5C with those shown in Figs. 7A-7C of the present application.

These same arguments apply to independent Claim 8, which is also allowable.

In conclusion, none of the references, whether alone or combined, disclose or suggest the present invention nor render it unpatentable.

In view of the foregoing amendments and remarks, applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

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VERSION OF CLAIM MARKED TO SHOW CHANGES

1. (Twice Amended) A photoelectric converter comprising a photoelectric conversion element of a laminated structure comprising:

a first electrode layer;

an insulation layer for blocking the passage of [a first carrier and a second carrier having different polarity from the first carrier] holes and electrons;

a photoelectric conversion semiconductor layer;

an injection blocking layer for blocking the injection of [the first carrier] only one of the holes and electrons to the photoelectric conversion semiconductor layer;

a second electrode layer; and

a switching means for operating the converter by switching through the following three operation modes a) through c)[, in that order, to apply an electric field to each layer of the photoelectric conversion element]:

a) an idling mode for emitting [the second carrier] one of the holes or the electrons from the photoelectric conversion element;

b) a refresh mode for refreshing the [first carrier] the other of the holes or the electrons accumulated in the photoelectric conversion element; and

c) a photoelectric conversion mode for [generating pairs of the first carrier and the second carrier] accumulating at least one of pair of holes and electrons generated in accordance with an amount of incident light[to accumulate the first carrier].

2. (Twice Amended) The photoelectric converter according to claim 1, wherein a potential difference V_{dg} [[idle]] obtained by subtracting the potential of the second electrode layer from the potential of the first electrode layer of the photoelectric conversion element in the idling mode is smaller than a potential difference V_{dg} [[read]] obtained by subtracting the potential of the second electrode layer from the potential of the first electrode layer of the photoelectric conversion element in the photoelectric conversion mode.

8. (Twice Amended) A system comprising:

a photoelectric converter comprising a photoelectric conversion element of a laminated structure comprising:

a first electrode layer[,];

an insulation layer for blocking the passage of [a first carrier,] holes and electrons;

[a second carrier having different polarity from the first carrier,]

a photoelectric conversion semiconductor layer[,];

an injection blocking layer for blocking the injection of [the first carrier] only one of the holes and electrons to the photoelectric conversion semiconductor layer[,];

a second electrode layer[,]; and

a switching means is provided for operating the converter by switching through the following three operation modes a) through c)[, in that order, to apply an electric field to each layer of the photoelectric conversion element]:

a) an idling mode for emitting [the second carrier] <u>one of the holes or the electrons</u> from the photoelectric conversion element[,];

b) a refresh mode for refreshing the [first carrier] <u>the other of the holes or the electrons</u> accumulated in the photoelectric conversion element[,]; and

c) a photoelectric conversion mode for [generating pairs of the first carrier and the second carrier] <u>accumulating at least one of pair of holes and electrons generated</u> in accordance with an amount of incident light [to accumulate the first carrier];

a signal processing means for processing a signal from the photoelectric converter;

a recording means for recording a signal from the signal processing means;

a display means for displaying a signal from the signal processing means;

an electric transmission means for electrically transmitting a signal from the signal processing means; and

a radiation source for generating radiation.

9. (Amended) The photoelectric converter according to claim 2, wherein the potential V_{dg} [[idle]]is greater than zero.